

The Case of a High Capacity Well near Lake Beulah



Established 1894

Member, Wisconsin Association of Lakes



East Troy, Wisconsin

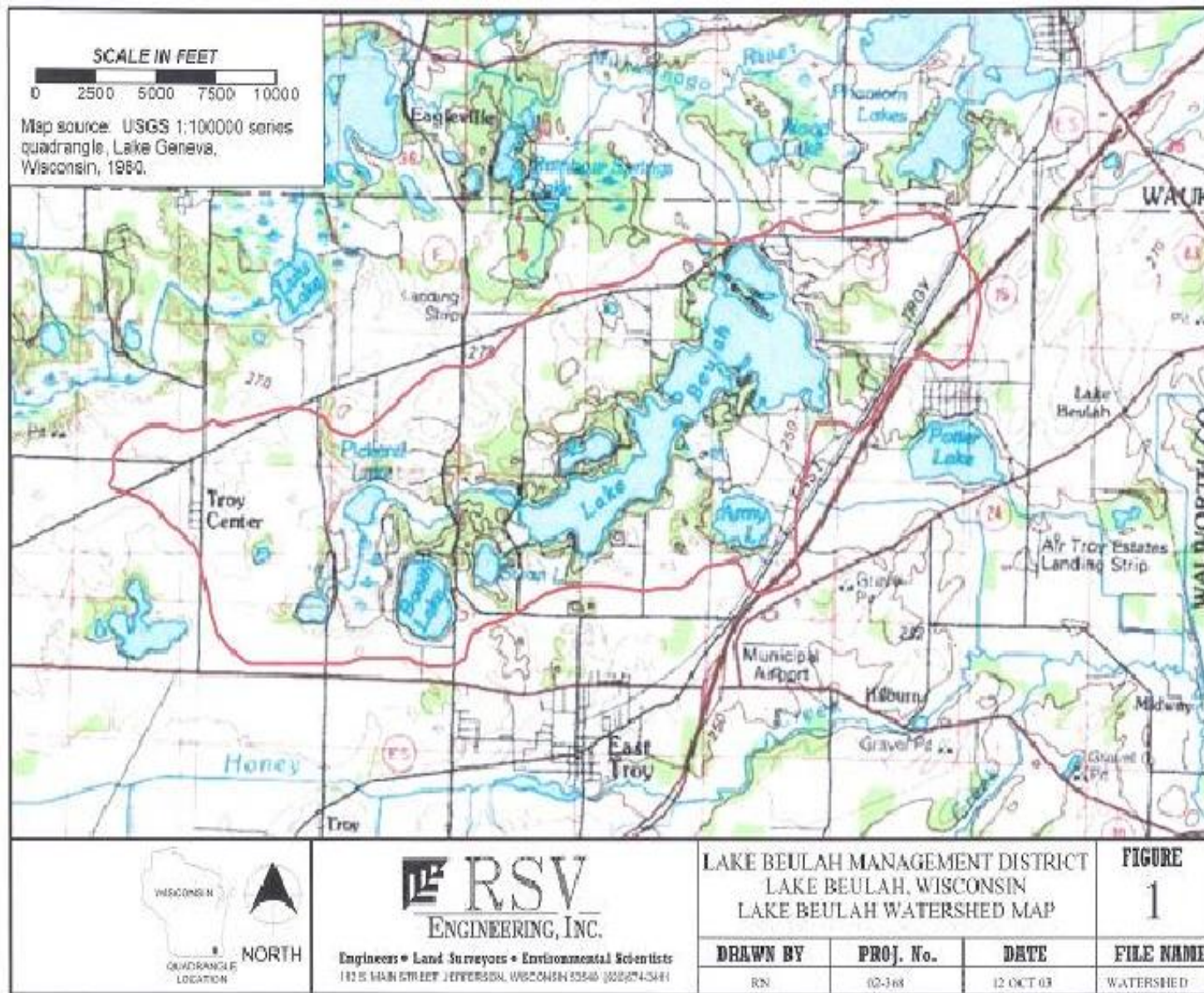
www.lakebeulah.org

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Lake Beulah Protective and
Improvement Association



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Background - Well 7



- Increasing urbanization near lakes in SE Wisconsin
- Rapid, poorly planned growth in some areas
- Municipal wells near lakes “easy answer” for water
- **High capacity:** 1000 gallons/minute (1.4 million gallons per day!!) increasingly common, shallow aquifers
- NO PROTECTION from recent “Groundwater Protection” Act (310)
- DNR does **NOT** consider **impact on lake** in permitting process

POTENTIAL IMPACT

(Logical chain of events)



- Reduction of groundwater inflow
- Decreased purging effect in lake
- Changes in lake water chemistry, temperature
- Reduction in lake water quality
 - Likely slow, long term
- Adverse effect on lake's ecosystem
- Possible water level drop
- Economic losses

Chronology of Village Well #7



- 2001 Village explores well sites
- June 20th, 2003: Application filed with DNR
- Sept. 4th, 2003: DNR issues permit for 312 ft. well @ max capacity to pump 1000 gpm (1.4 MGD) approx. 1400 ft. from Lake Beulah
- Oct. 6th, 2003: Lake Beulah Mgm't. District (LBMD) petitioned DNR for contested case hearing on the permit.
- Oct. 24th, 2003: DNR denied petition on condition that no other public water supply well would be impaired & well is constructed in 2 yrs.
- Jan. 13th, 2004: DNR reversed its position & grants cont. case hrg.
- Mar. 26th, 2004: Village files motion for dismissal
- June 11th, 2004: State ALJ issues summary judgment in favor of Village noting LBMD had not demonstrated impact to surface waters.
- June 24th, 2005: Walworth Co. Circuit Court affirms the ALJ dec.
- Sept. 6th, 2005: DNR extends well permit approval for 2 more years.
- Dec. 5th, 2005: District & Assoc. file appeal with State Ct. of Appeals
- Jan. 20th, 2006: Village files its Response Brief with State Ct.
- EXPECT STATE COURT OF APPEALS DECISION IN 4-6 MOS.

Recommendations



- Revise Act 310 to include PROTECTION of LAKES
- Require DNR to consider IMPACT on nearby lakes of HIGH CAPACITY WELLS in permitting process
- Develop appropriate GUIDELINES for permits
- Sponsor further RESEARCH on groundwater-lake interactions and limnological impact
- Develop better computer based MODELS of groundwater –limnology effects
- Develop a SYSTEMS APPROACH to well siting, including wastewater management



For more information
please visit our Website

www.lakebeulah.org

Or contact rab@lakebeulah.org

High Capacity Wells in Perspective



- Waukesha – Milwaukee current proposal:
 - 100,000 gallons / day
- East Troy Well 7
 - 1,440,000 gallons / day (permitted) 10X !!
- Mukwonago – Phantom Lake
 - 720,000 gallons / day ? (under discussion)
 - Many more to follow at other WI lakes!!

High capacity wells

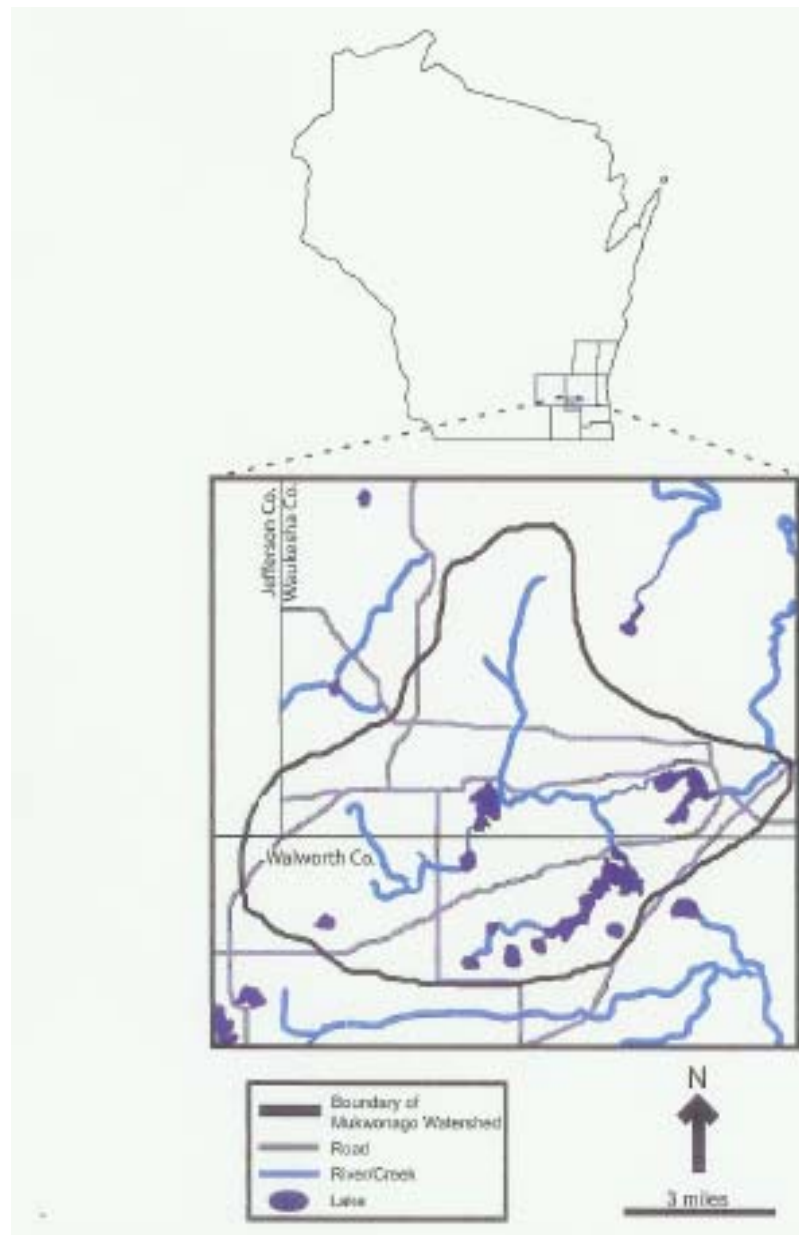


- Can pump $> 100,000$ gpd (70 gpm) from single property
- Used for irrigation, livestock, manufacturing, beverages, and public water supply
- Existing approvals only consider effects on public water supplies

EXAMPLE: EAST TROY



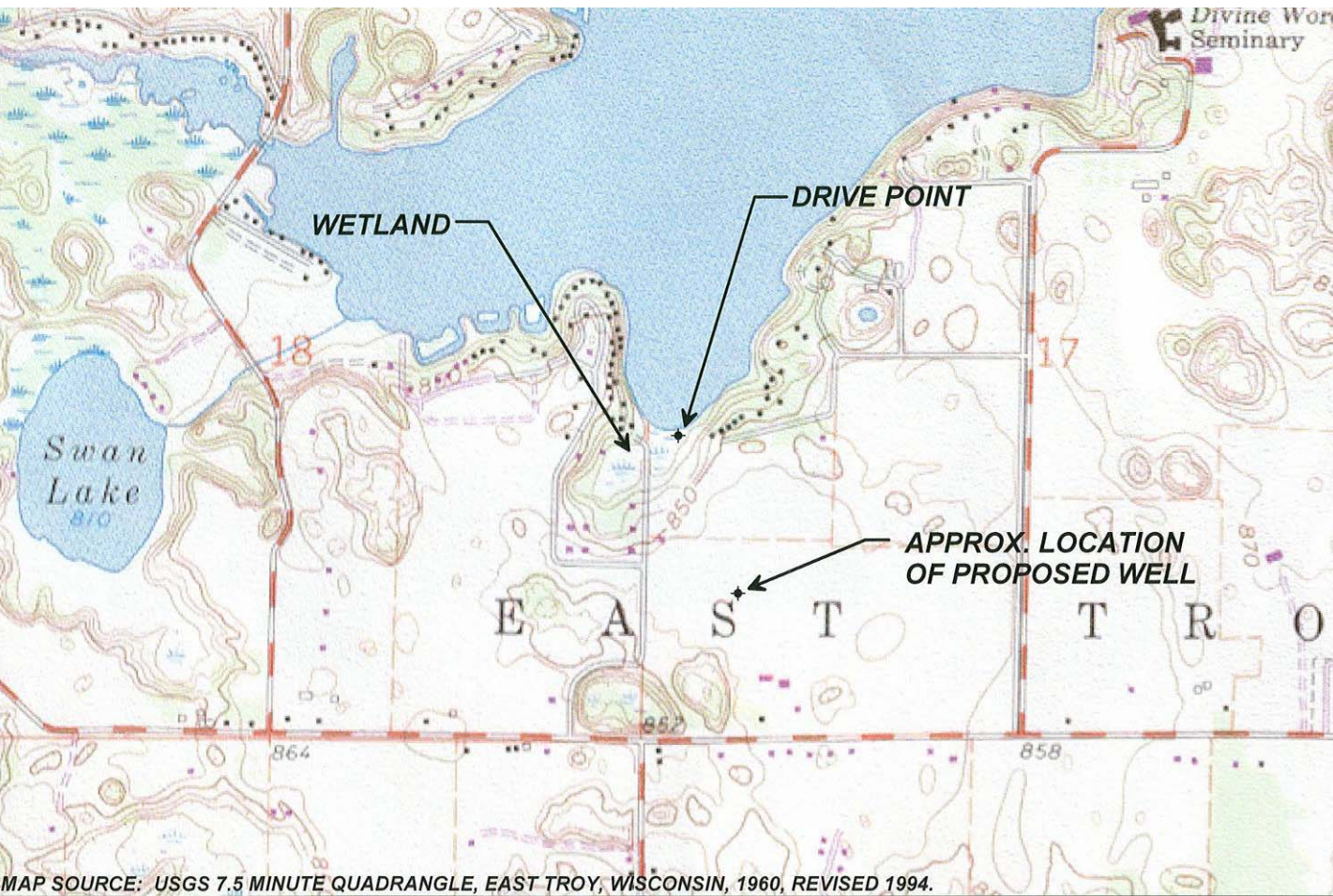
- Well 7 permitted by DNR
- High Capacity (**1000 gal/min**)
- Near **sensitive lakeshore** area
- Inadequate testing
- Total **export of water** from watershed!
- No plans to recharge aquifer
- **No environmental impact study**



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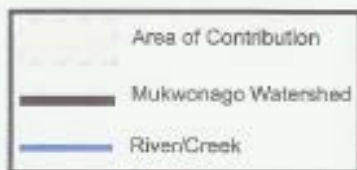
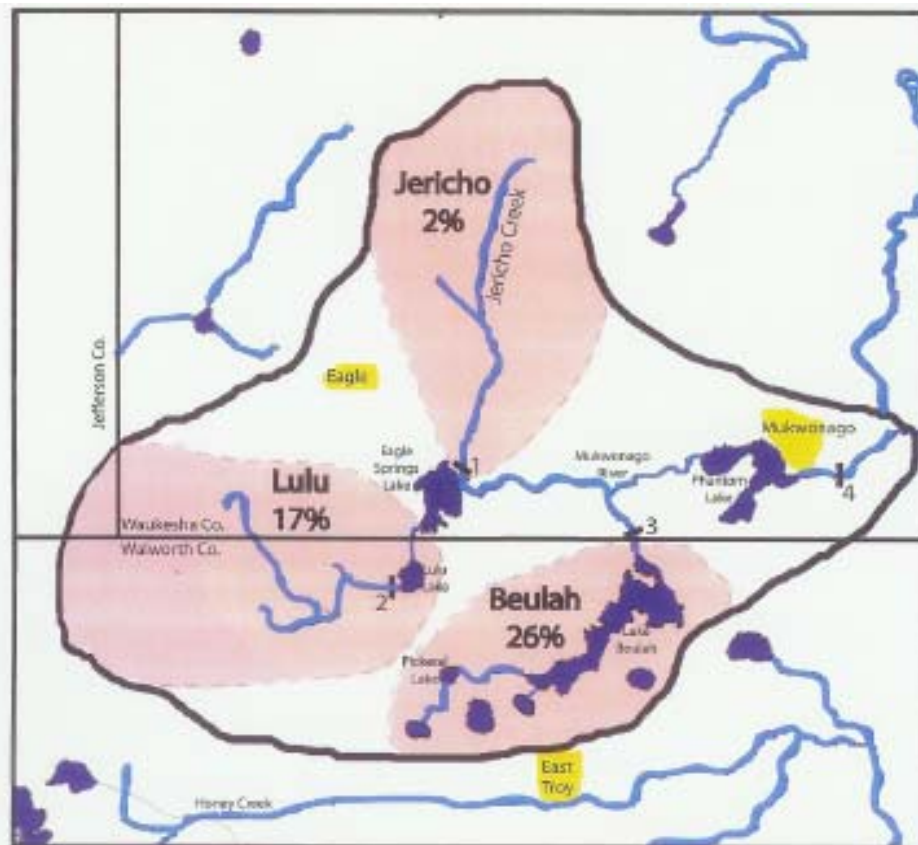


Location of ET Well 7



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Site	Q (ft ³ /s)	Date
1	0.81	9/4/04
2	5.46	9/4/04
3	8.68	9/4/04
4	33.0	9/4/04

N



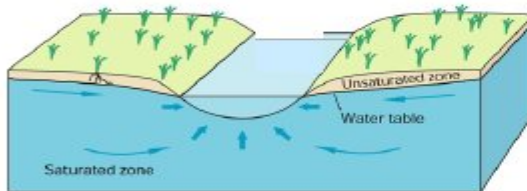
3 miles

Figure 19. During September, 2004 the Lake Beulah region contributed approximately 26% of the flow to the Mukwonago River. The Lulu Lake area contributed 17% and the Jericho Creek area only 2%. The remainder of the flow enters the system along the main channel between Lulu Lake and the town of Mukwonago.

Lake Beulah is a Ground-water Discharge Lake

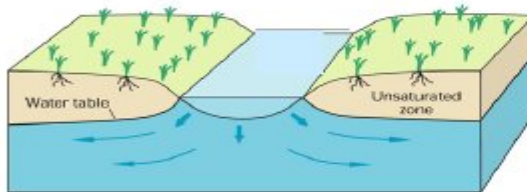


Ground-water discharge lake ("spring fed")



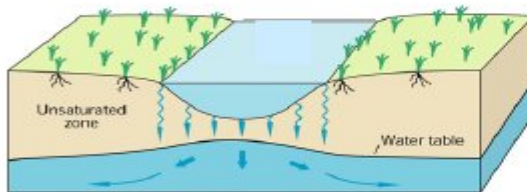
Ground water impacts quantity and quality of lake. Wells reduce inflow

Ground-water recharge lake



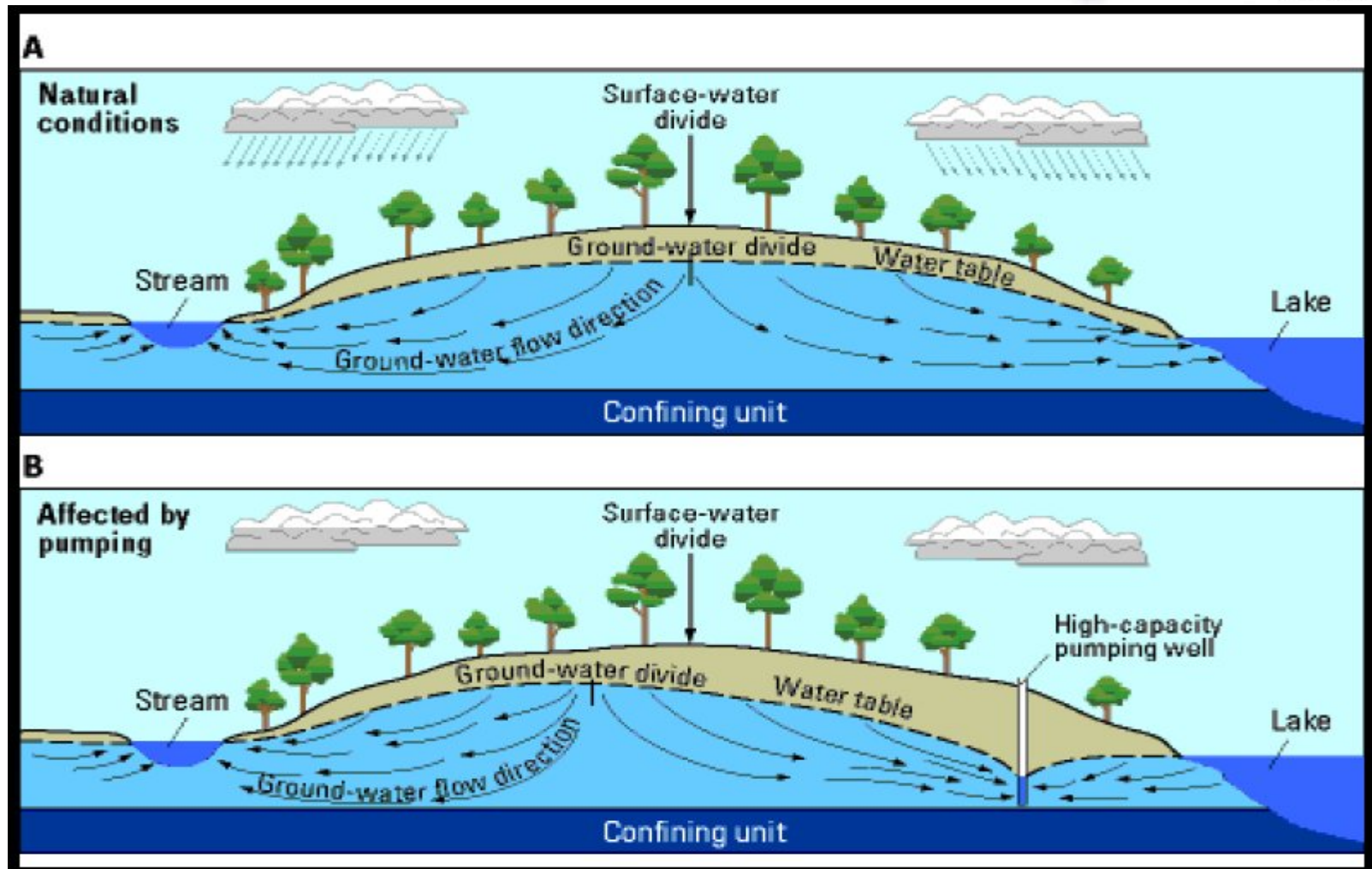
Ground water has no direct impact, but wells draw more water from lakes

Perched lake



These lakes are unaffected by ground water changes

Hi-Cap Wells Can Change Groundwater Flow Away From Surface Waters



ALTERNATIVES



- Relocation of wells
- Reduction in pumping volume
- Confine pumping and wastewater to same watershed
- Provision for recharging of aquifers
- Use of best water management practices
- Water conservation

OUR CURRENT THRUSTS



Engineering, Science

Surface water-groundwater interaction

Predictive flow modeling, computer simulation

Environmental impact

Public Policy and Education

Legislative interactions

Outreach

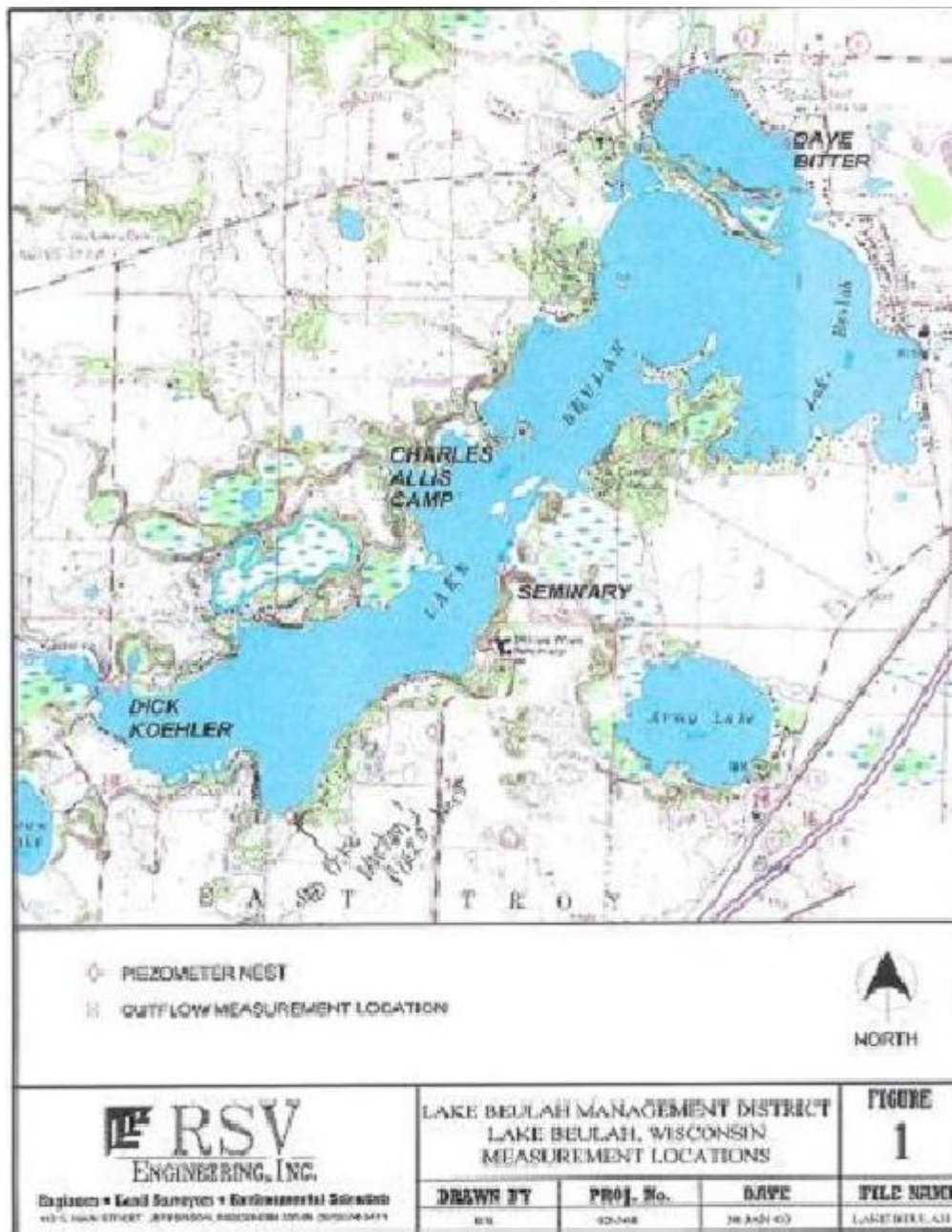
Workshops

Development of Alternative Solutions



WISE WATER MANAGEMENT

The Key to Sustainability



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BUILDING ALLIANCES



- Lake Management Districts (e.g.. PLMD)
- Other Lake Associations
- University Research Projects (UW)
- USGS
- Nature Conservancy
- Other Environmental Groups

FOR THE LEGISLATURE



- WI “Groundwater Protection Act” (310) provides NO PROTECTION for our lakes and must be revised!!

Consider the [Public Trust Doctrine](#) regarding lakes!

Examine what other states (e.g. MN, MI) have done to protect their lakes

Expedite Groundwater Advisory Committee recommendations

Our Current Position



- Thorough investigation of **ALTERNATIVES** by Village
- **NO OPERATION** of Well 7 before environmental impact studies are completed
- **NO DIVERSION** of water from the watershed
- Implement **WISE WATER MANAGEMENT**



HIGH CAPACITY WELLS

The growing **THREAT** to **LAKE**
WATER QUALITY
AND
ECOSYSTEMS

DON'T
"EVER"
GIVE UP



Acknowledgements



- Prof. Doug Cherkauer UW Milwaukee
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- Scott Thompson Nature Conservancy
- Ezra Meyer Wisconsin Assoc. of Lakes

- And the many members of the [Lake Beulah Team!!](#)